AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for estimating, by a terrain navigational system of a moving vehicle with limited maneuverability, curvilinear ~~distance~~ distances to be traversed by the vehicle from its instantaneous position to reach points of a travel region containing potential obstacles to be circumvented by said vehicle ~~within a region where a craft with limited maneuverability is traveling~~in order to establish a distance map covering the travel region wherein ~~and which contains potential obstacles to be circumvented, which region is referred to as travel region, in which a map of distances is established covering the travel region and having as origin of the distance measurements the instantaneous position of the craft, comprising the steps of: when the distance map is established, in completing~~ the curvilinear distance estimations of the distance map are obtained by means of a distance transform by propagation taking into account, besides the potential obstacles to be circumvented, [[by]] an additional obstacle to be circumvented, placed in the neighborhood of the vehicle, ~~craft and associated with~~ linked to the vehicle ~~craft,~~ and locating ~~cataloging~~ areas of the near neighborhood of the craft considered to be inaccessible to the craft owing to its limited maneuverability.

2. (Currently Amended) The method as claimed in claim 1, wherein the additional obstacle is of concave shape and disposed in the neighborhood of the instantaneous position of the ~~craft~~ vehicle ~~in such a manner that its~~ the concavity [[is]] being turned into the direction of the motion of the ~~craft~~ vehicle and encompasses the instantaneous position of the ~~craft~~ vehicle.

3. (Withdrawn-Currently Amended) The method as claimed in claim 1, wherein the additional obstacle is U-shaped, the opening of the U being turned into the direction of the motion of the ~~craft~~ vehicle and encompassing the instantaneous position of the ~~craft~~ vehicle.

4. (Withdrawn-Currently Amended) The method as claimed in claim 1, wherein the additional obstacle has a half-moon shape, the opening of the half-moon being turned into the direction of the motion of the ~~craft~~ vehicle and encompassing the instantaneous position of the ~~craft~~ vehicle.

5. (Withdrawn-Currently Amended) The method as claimed in claim 1, wherein the additional obstacle has a dual-lobed butterfly-wing shape, placed on either side of the instantaneous position of the craft and having a common tangent oriented in the direction of motion of the craft.

6. (Currently Amended) The method as claimed in claim 1, wherein when the ~~craft~~ vehicle is an aircraft, the contour of the additional obstacle comprises parts corresponding to the ground projections of two circles ~~associated with the aircraft~~passing through the position of the aircraft, having a radius equal to the radius of curvature of the tightest turn allowed for the aircraft at the time being considered.

7. (Currently Amended) The method as claimed in claim 1, wherein when the ~~craft~~ vehicle is an aircraft subject to a cross-wind, the contour of the additional obstacle comprises parts of a cycloid corresponding to the ground projections of two circles associated with the aircraft, having a radius equal to the radius of curvature of the tightest turn allowed for the aircraft at the time being considered.

8. (Withdrawn-Currently Amended) The method as claimed in claim 1, wherein, when the ~~craft~~ vehicle is an aircraft subject to a cross-wind, the contour of the additional obstacle consists of two lobes of a cycloid limited to their parts going from their starting point, which is the instantaneous position of the aircraft, to their second intersection with the straight lines going from the instantaneous position of the aircraft to virtual positions on the cycloid lobes corresponding, for the aircraft, to an arbitrary track modification angle.

9. (Withdrawn-Currently Amended) The method as claimed in claim 1, wherein when the ~~craft~~ vehicle is an aircraft subject to a cross-wind, the contour of the additional obstacle consists of two lobes of a cycloid limited to their parts going from their starting point, which is the

instantaneous position of the aircraft, to their second intersection with the straight lines going from the instantaneous position of the aircraft to virtual positions on the cycloid lobes corresponding, for the aircraft, to a track modification angle of 180 degrees.

10. (Previously Presented) The method as claimed in claim 1, wherein when the craft is an aircraft subject to a cross-wind and the distance map is established within a geographical reference frame using longitudes and latitudes, the contour of the additional obstacle has two parts in the form of cycloid lobes obeying the system of parametric equations:

$$\begin{pmatrix} x \\ y \end{pmatrix}_g = \begin{pmatrix} WS_{Xg}.t - \delta.R.\cos(wt + \gamma_g) + C_{Xg} \\ WS_{Yg}.t + R.\sin(wt + \gamma_g) + C_{Yg} \end{pmatrix}$$

x and y being the abscissae and ordinates of a point in the geographical reference frame of the distance map,

$\begin{pmatrix} WS_X \\ WS_Y \end{pmatrix}$ being the wind vector expressed in the geographical reference frame of the distance map,

with

$$R = \frac{TAS^2}{g.\tan\varphi_{roll}}$$

$$w = \frac{TAS}{R} = \frac{g.\tan\varphi_{roll}}{TAS}$$

TAS being the amplitude of the airspeed of the aircraft,

φ_{roll} being the roll angle of the aircraft during the maneuver,

γ being a factor that depends on the initial conditions,

δ being a coefficient equal to +1 for a right turn and -1 for a left turn, and

with

$$C_{Xg} = Long + \delta.R.\cos(\gamma_g)$$

$$C_{Yg} = Lat - R.\sin(\gamma_g)$$

$$\gamma_g = \delta.Heading + k.\Pi$$

Long being the longitude of the instantaneous position of the aircraft,
Lat being the latitude of the instantaneous position of the aircraft, and
Heading being the flight direction of the aircraft.

11. (Previously Presented) The method as claimed in claim 1, wherein the additional obstacle taking into account the maneuverability limits of the craft is missing the surface area of a free angular sector starting from the craft and having its opening turned into the direction of motion of the craft.

12. (Previously Presented) The method as claimed in claim 11, wherein, when the distance map takes the form of a grid of cells corresponding to the elements of a database of elevation of the terrain covering the area of travel of the craft, the additional obstacle taking into account the maneuverability limits of the craft is missing the cells that are totally or partially covered by the free angular sector.

13. (Currently amended) The method as claimed in claim 11, wherein, when the distance map results from [[the]] an application, to the pixels of an image formed by a map taken from a database of elevation of the terrain, of a distance transform that uses a chamfer mask cataloging the distances of a pixel under analysis with respect to the nearest pixels, called pixels of the neighborhood, and that has axes of propagation oriented in the directions of the pixels of the neighborhood with respect to the pixel under analysis in the chamfer mask, the free angular sector has its opening oriented along the axis of propagation nearest to the direction of motion of the craft.

14. (Previously Presented) The method as claimed in claim 12, wherein the free angular sector of propagation is bounded by bisectors of the angles formed by the axes of propagation.